BRECKWELL

Hearth Products

2005

PELLET STOVE INFORMATION GUIDE

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THIS GUIDE HAS INFORMATION PERTAINING TO BRECKWELL PELLET MODELS 2002 AND NEWER.

1. ELECTRICAL PARTS DESCRIPTION

CONVECTION BLOWER:
- 2 POLE, 3000 RPM, 165 CFM
- OILLESS BLOWER
- USES BALL BEARINGS
- AIR COOLED
- THERMALLY PROTECTED
- 1/8" THICK NEOPREME RUBBER GASKET AND MOUNTED WITH RUBBER BACKED SCREWS ---- KEEPS NOISE DOWN
- CAN BE RETROFITTED TO PRE 1992 MODELS WITH AN ADAPTER PLATE. ADAPTER COMES WITH GASKET AND SCREWS.

COMBUSTION BLOWER:
- 2 POLE, 3000 RPM, 72 CFM
- OILLESS BLOWER
- USES BALL BEARINGS
- ALL NEW STOVES HAVE A ¼" THICK DIE-CUT CERAMIC FIBER GASKET. STOVES PRIOR TO 2001 MODELS HAVE A 1/8" X 3/8" GASKET ATTACHED TO THE BLOWER HOUSING. ALL REPLACEMENT BLOWERS WILL HAVE THE NEW STYLE GASKET.

AUGER MOTOR:
- 1 RPM
- THERMALLY PROTECTED

AIR SWITCH:
- NORMALLY OPEN DIAPHRAM SWITCH
- 0.1" WATER COLUMN NEGATIVE PRESSURE CLOSES DIAPHRAM

PROOF OF FIRE THERMODISK:
- NORMALLY OPEN
- CLOSE AT 110° F
- OPEN AT 90° F
- OLDER STOVES HAD THERMODISK(S) MOUNTED THE EXHAUST TRANSITION OR CONVECTION CHAMBER BACK, NOW ALL ARE MOUNTED ON THE COMBUSTION BLOWER HOUSING.

HOPPER SWITCH
- NORMALLY OPEN
- WHEN HOPPER LID IS OPEN POWER IS SHUT OFF TO THE AUGER ONLY. ALL OTHER FUNCTIONS WILL CONTINUE NORMALLY.
- WHEN HOPPER LID IS CLOSED THE AUGER WILL RESUME RUNNING AT THE PRESET HEAT LEVEL.

HIGH TEMPERATURE THERMODISK:
- NORMALLY CLOSED
- OPEN AT 300° F
- SOME ('00 – '04) HAVE A RESET BUTTON THAT WILL NEED TO BE PUSHED BACK IN IF THE STOVE OVER-HEATS.
- SOME (pre 2000 & 2005) WILL USE THE NON-RESETABLE STYLE.

HOT ROD IGNITER:
- 300 WATTS
- IGNITER HOUSING IS REMOVABLE AND REPLACABLE ON SOME 2003 STOVES AND ALL 2004+ UNITS.

DIGITAL CONTROL BOARD:
- 1 RPM / 5 POSITION BOARDS (C-E-401) (2002 & NEWER) (BLACK FACE W/THERMOSTAT MODE SWITCH)
  (STICKER ON THE BACK INDICATING C-E-401 / 1 RPM)
  THIS BOARD FITS ALL 2002 AND NEWER STOVES, EXCEPT THE P22.
  FEED RATES RANGE FROM 1 LB/HR TO 5 LB/HR.
- THE P22 BOARDS (PART # C-E-101) (2002 & NEWER)
  (BLACK FACE / 4 POSITIONS / THERMOSTAT MODE SWITCH)
  (STICKER ON THE BACK INDICATING C-E-101 / 1 RPM)
  FEED RATES RANGE FROM 1 LB/HR TO 4 LB/HR.

2. INSTALLATION

ALL FREESTANDING BRECKWELL PELLET STOVES ARE LISTED FOR INSTALLATION INTO RESIDENTIAL, MOBILE HOMES AND ALCOVES.

ALL INSERT BRECKWELL PELLET STOVES ARE APPROVED FOR INSTALLATION INTO MASONRY FIREPLACES, FACTORY BUILT ZERO CLEARANCE FIREPLACES AND BUILT IN FIREPLACES IN MOBILE HOMES.

- INSERTS ARE ALSO APPROVED AS A BUILT IN FIREPLACE FOR NEW CONSTRUCTION.

BASIC ELECTRICAL REQUIREMENTS:

- AC VOLTAGE SHOULD BE 120 VOLTS
- UTILITY COMPANYS ALLOW FOR PLUS OR MINUS 5%. THIS EQUATES TO PLUS OR MINUS 6 VOLTS.
- THE STOVE WILL OPERATE AS DESIGNED AT VOLTAGES BETWEEN 114 AND 126 VOLTS.
- THE VOLTAGE SHOULD ALWAYS BE CHECKED AT THE WALL PLUG PRIOR TO THE INSTALLATION.
- THE CONSUMER SHOULD EXPECT THE UTILITY CO. TO PROVIDE THE PROPER VOLTAGE.

GROUNDING:

- ALL NEWER HOMES HAVE 3 PRONG RECEPTACLES.
- OLDER HOMES MAY HAVE 2 PRONG RECEPTACLES
  1. ONE TYPE HAS ONE SIDE LARGER THAN THE OTHER.
  2. ANOTHER TYPE HAS BOTH SIDES THE SAME SIZE.
- BOTH TYPES OF 2 PRONG RECEPTACLES NEED TO HAVE A SEPARATE GROUND INSTALLED. RUN A COPPER WIRE TO A LIGHTNING ROD OR A COPPER WIRE TO THE HOUSE PLUMBING.

GENERATORS:

OUR PELLET STOVES WILL OPERATE USING A GENERATOR.

- 660 WATT MIN.

AC INVERTERS:

- 12 VOLT DC TO 110 VOLT AC.
- 660 WATT MIN.

BRECKWELL ELECTRICAL SPECS.

1 RPM AUGER MOTOR = .45 AMPS
COMBUSTION BLOWER = 1.3 AMPS
CONVECTION BLOWER = 1.5 AMPS
HOT ROD = 2.72 AMPS
TOTAL AMPS = 5.97 AMPS

DURING START-UP WITH HOT ROD ON THE STOVES PULL 657 WATTS.

DURING NORMAL OPERATION THE STOVES PULL 358 WATTS MAX.

BASED ON 110 WATTS PER AMP

COMBUSTION AIR:

- NSO PREFERS INSIDE AIR FOR COMBUSTION AS LONG AS THE HOME IS NOT AIR TIGHT. WHY? ---- OUTSIDE AIR IS COLD AND MOIST. CONDENSATE IN THE SYSTEM CAUSES CREOSOTE BUILD-UP AND DIRTY GLASS.
- SOME BUILDING INSPECTORS MAY REQUIRE OUTSIDE AIR FOR COMBUSTION.
- IN INSERT INSTALLATIONS IF THE FIREPLACE IS TOO SMALL, SPACE IT OUT ABOUT ¼" TO 3/8" FROM THE FLASHING BACK TO THE FACE OF THE FIREPLACE.

OUTSIDE AIR:

OUTSIDE AIR IS REQUIRED IN MOBILE HOME AND MOST ZERO-CLEARANCE FIREPLACES.

- USE 2" ALUMINUM Z-FLEX OR 1 ¾" METAL PIPE (FLEXIBLE OR RIGID).
- ATTACHES TO AIR INLET PIPE AT REAR OF UNIT. 2" FLEX CAN BE INSTALLED FROM DAMPER TO REAR OF STOVE IF BUILDING INSPECTOR WANTS IT.
- TERMINUS SHOULD HAVE A WIND HOOD OR BE TURNED 45 DEG. TO PREVENT OVERDRAFT.
- RODENT GUARD SHOULD BE USED WHERE APPLICABLE.
- LOCATION OF INLET IS SHOWN IN MANUAL.

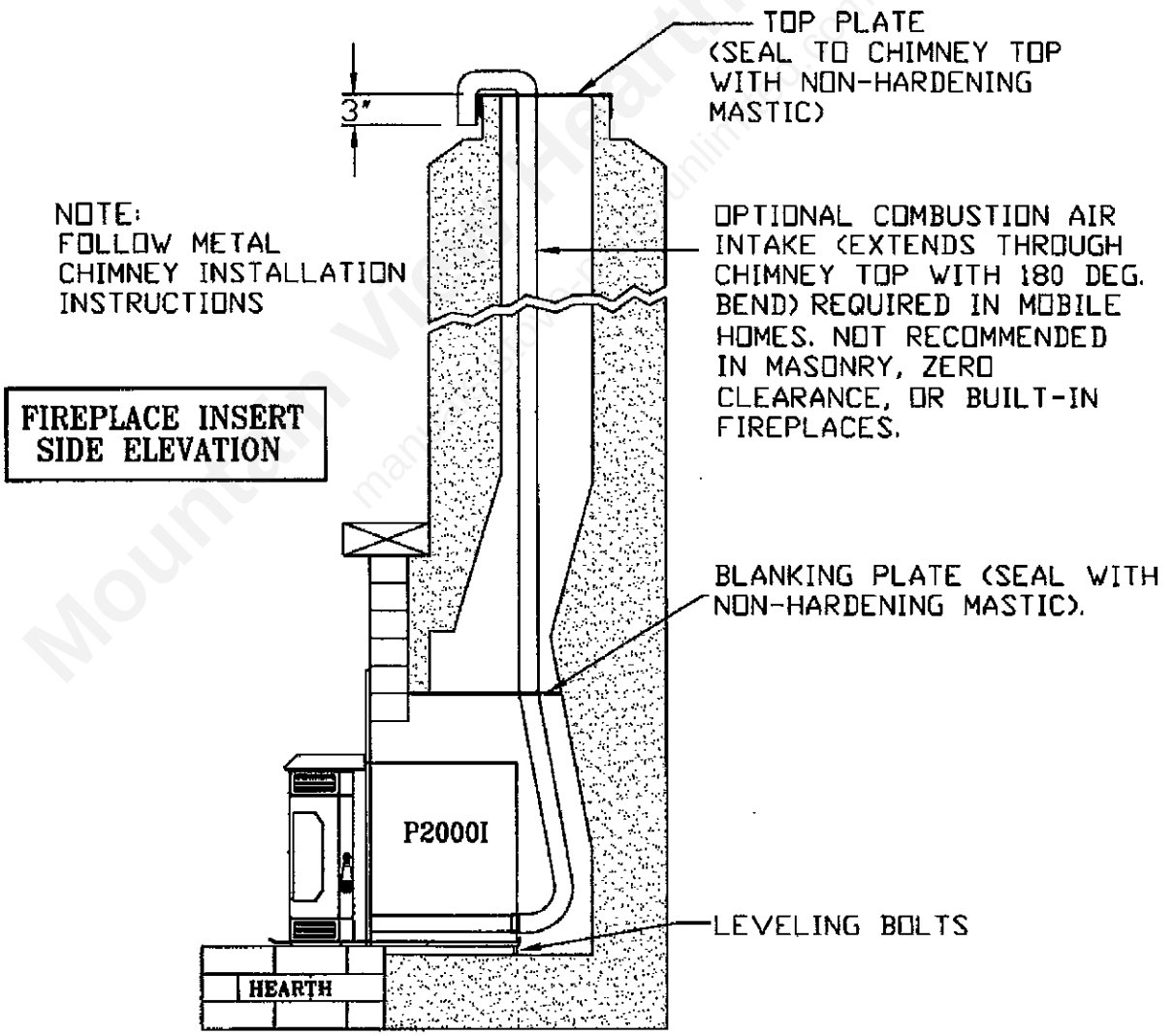
OUTSIDE AIR SOURCE:

INSERTS:

- THE TOP OF THE CHIMNEY OR THE ASH CLEANOUT DOOR.

FREESTANDINGS:

- HOLE IN THE FLOOR NEAR THE REAR OF THE STOVE.
- HOLE IN THE WALL BEHIND THE STOVE.



VENT TYPE:

- BRECKWELLS ARE CERTIFIED FOR USE WITH LISTED TYPE L-VENT 3" OR 4".
- STOVES WERE TESTED WITH SIMPSON DURAVENT BRAND.
- STOVES COME WITH DURAVENT ADAPTER.
- WHEN INSTALLING REFER TO VENT MANUFACTURES INSTRUCTIONS.

VENT SEALING:

- SILICONE
- ALUMINUM TAPE
- ¼" STRIP AROUND JOINTS AND PAINT.
- SEAL BLANKING PLATE WITH HIGH TEMP SILICONE
- PAINT FIREPLACE PRIOR TO INSTALLATION

CHIMNEY TERMINATION:

NFPA 211 (GOV. REG.) ELEMENTS OF TERMINATION

- NOT LESS THAN 3' ABOVE ANY FORCED AIR INLET LOCATED WITHIN 10'.
- NOT LESS THAN 4' BELOW, 4' HORIZONTALLY FROM OR 1' ABOVE ANY DOOR, WINDOW, OR GRAVITY AIR INLET INTO ANY BUILDING.
- NOT LESS THAN 2' FROM ANY ADJACENT BUILDING AND NOT LESS THAN 7' ABOVE GRADE WHEN LOCATED ADJACENT TO PUBLIC WALKWAYS.

  NOTE: IT IS IMPORTANT THAT THE TERMINATION BE POSITIONED SO THAT THE EXHAUST CANNOT BE RECIRCULATED BACK INTO THE INLET.

EQUIVALENT VENT LENGTH:

THIS IS A WAY TO DETERMINE WHETHER TO USE 3" OR 4" VENT IN AN INSTALLATION. IF YOU HAVE OVER 15' OF EQUIVALENT VENT LENGTH (EVL), WE RECOMMEND THE USE OF 4" PIPE.

TO CALCULATE EVL USE THE FOLLOWING CONVERSIONS:

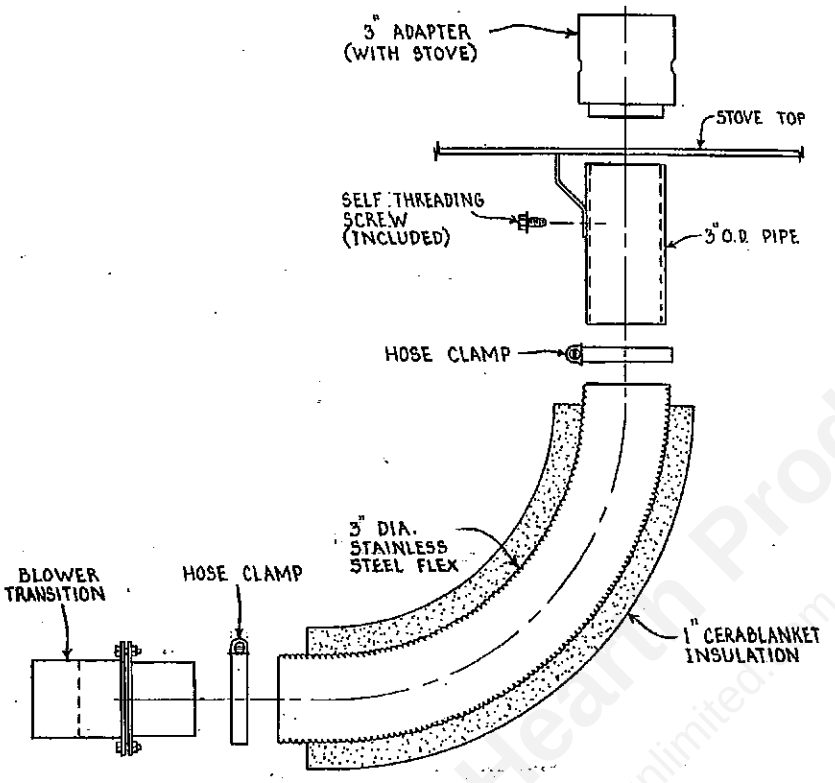
- 90 DEG. ELBOW OR TEE = 5 EQUIVALENT FEET
- 45 DEG. ELBOW = 3 EQUIVALENT FEET
- HORIZONTAL PIPE RUN = 1 FOOT PER ACTUAL FOOT
- VERTICAL PIPE RUN = ½ FOOT PER ACTUAL FOOT

NOTE: AT ALTITUDES ABOVE 3000' WE SUGGEST THE USE OF 4" DIAMETER VENT AT AN EVL OF 7 FEET.

FREESTANDING INSTALLATIONS

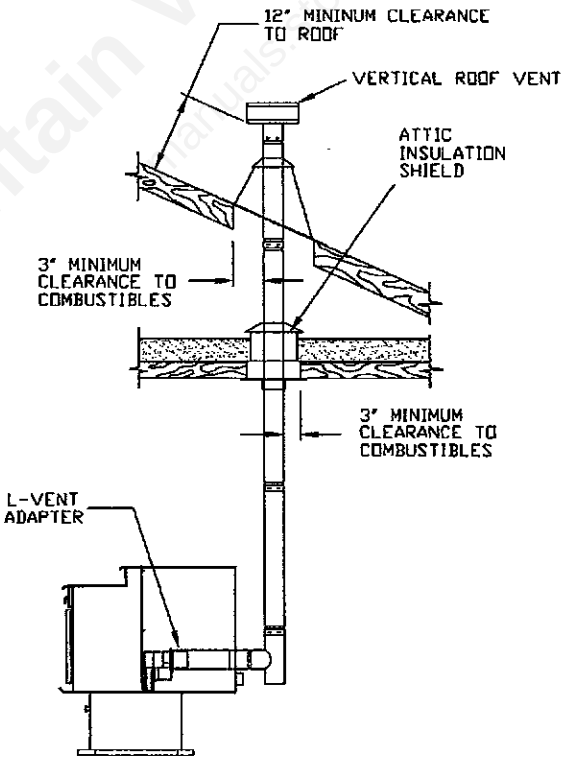
VERTICAL INSTALL KIT: (P24FS ONLY)

- WITH THE OPTIONAL VIK THIS STOVE CAN BE VENTED OUT THE STOVETOP.



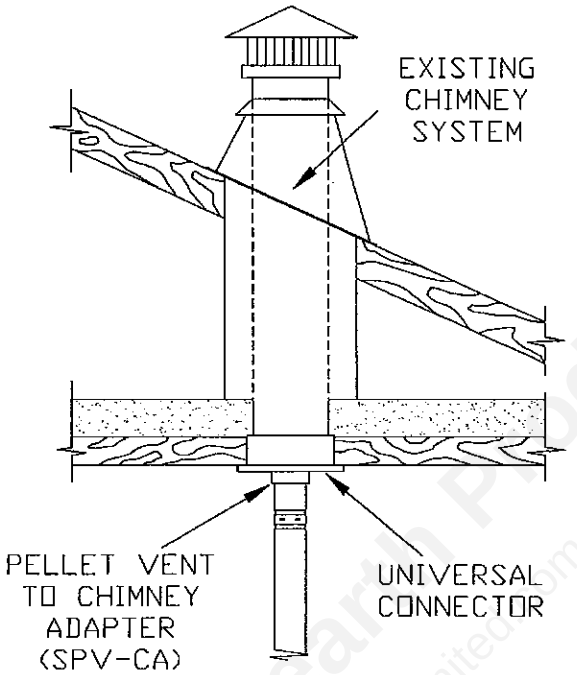
ALL OTHER MODELS:

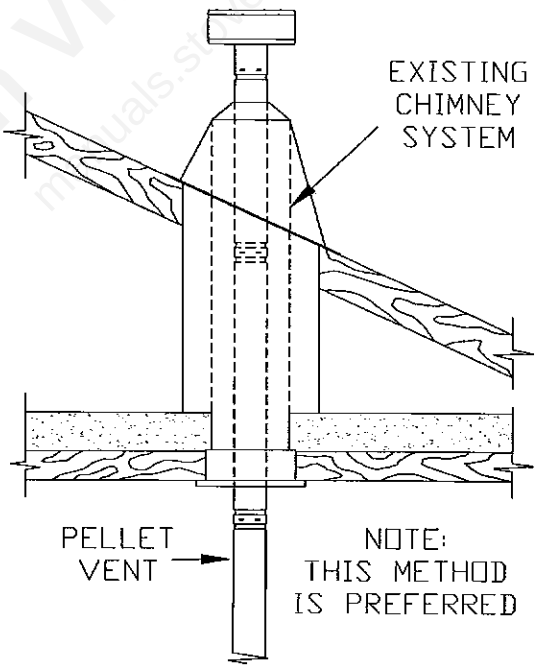
- MUST BE VENTED OUT THE BACK WITH ELBOW OR CLEANOUT TEE.



VENTING INTO A CLASS "A" CHIMNEY:

- IN SOME INSTALLATIONS (ESPECIALLY IN COLDER AREAS) WHEN ATTACHING DIRECTLY TO CLASS "A" CHIMNEYS THE COLD HEAVY AIR MASS IS FORCED THROUGH THE CHIMNEY CAUSING A BACK PRESSURE IN THE STOVE.
- WE RECOMMEND RUNNING THE VENT TO THE CHIMNEY TOP AND USING AN APPROPRIATE CAP.





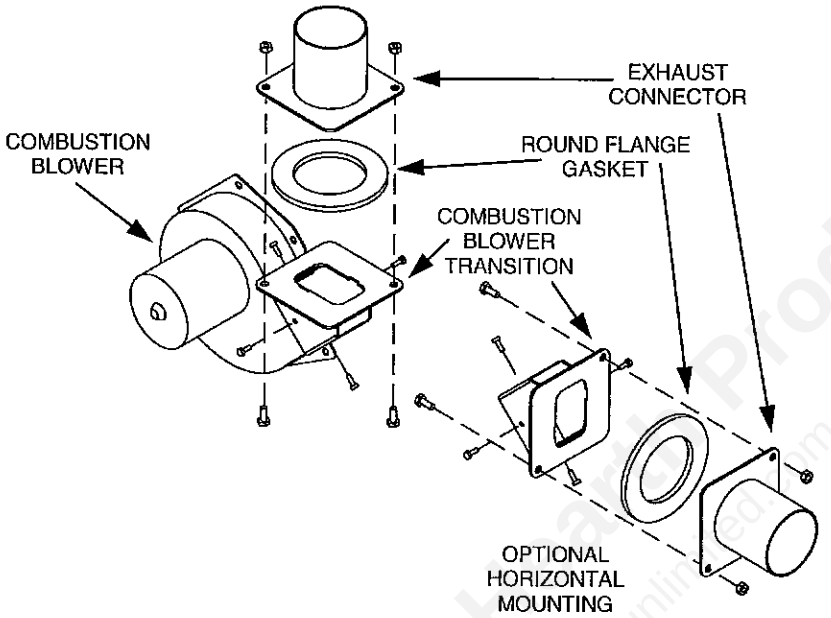
INSERT INSTALLATIONS

WHEN INSTALLING AN INSERT:

- THE CHIMNEY SHOULD BE CLEANED.
- THE FIREPLACE SHOULD BE CLEANED THOROUGHLY.
- THE FIREPLACE SHOULD BE PAINTED TO SEAL OUT ODORS.
- A BLANKING PLATE SHOULD BE INSTALLED TO SEAL OUT ODORS FROM THE CHIMNEY.

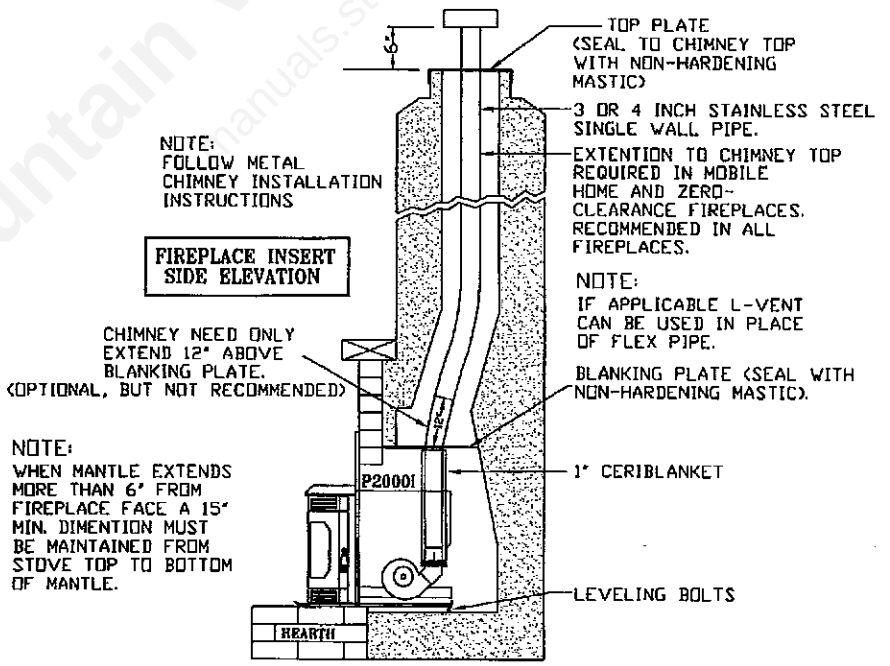
EXHAUST ADAPTER: (P24I AND P2000I)

- TOP OR REAR VENTING
- RESEAL!



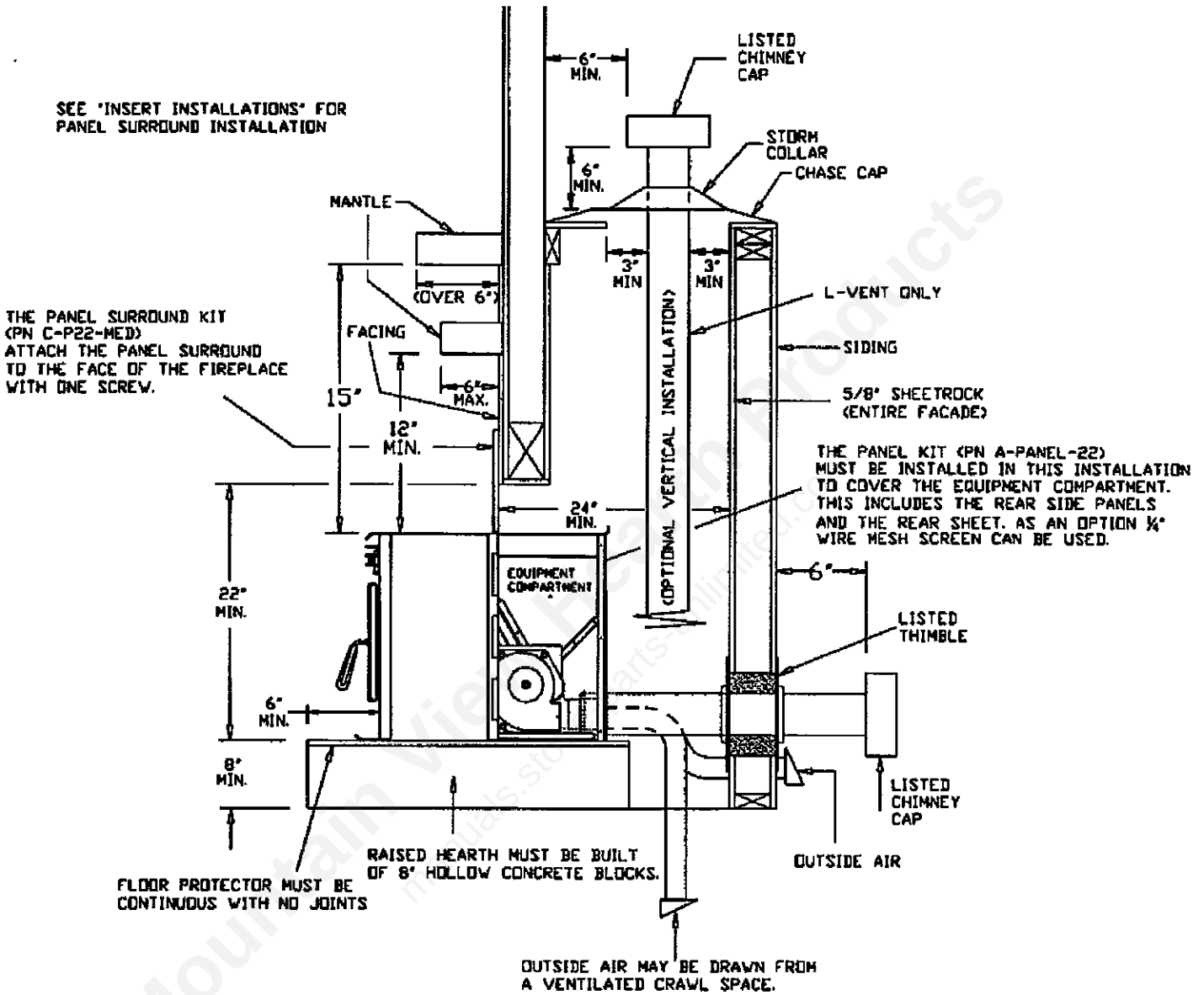
EXHAUST PIPE INSTALLATION:

- THROUGH CHIMNEY TOP
- 12" THROUGH BLANKING PLATE



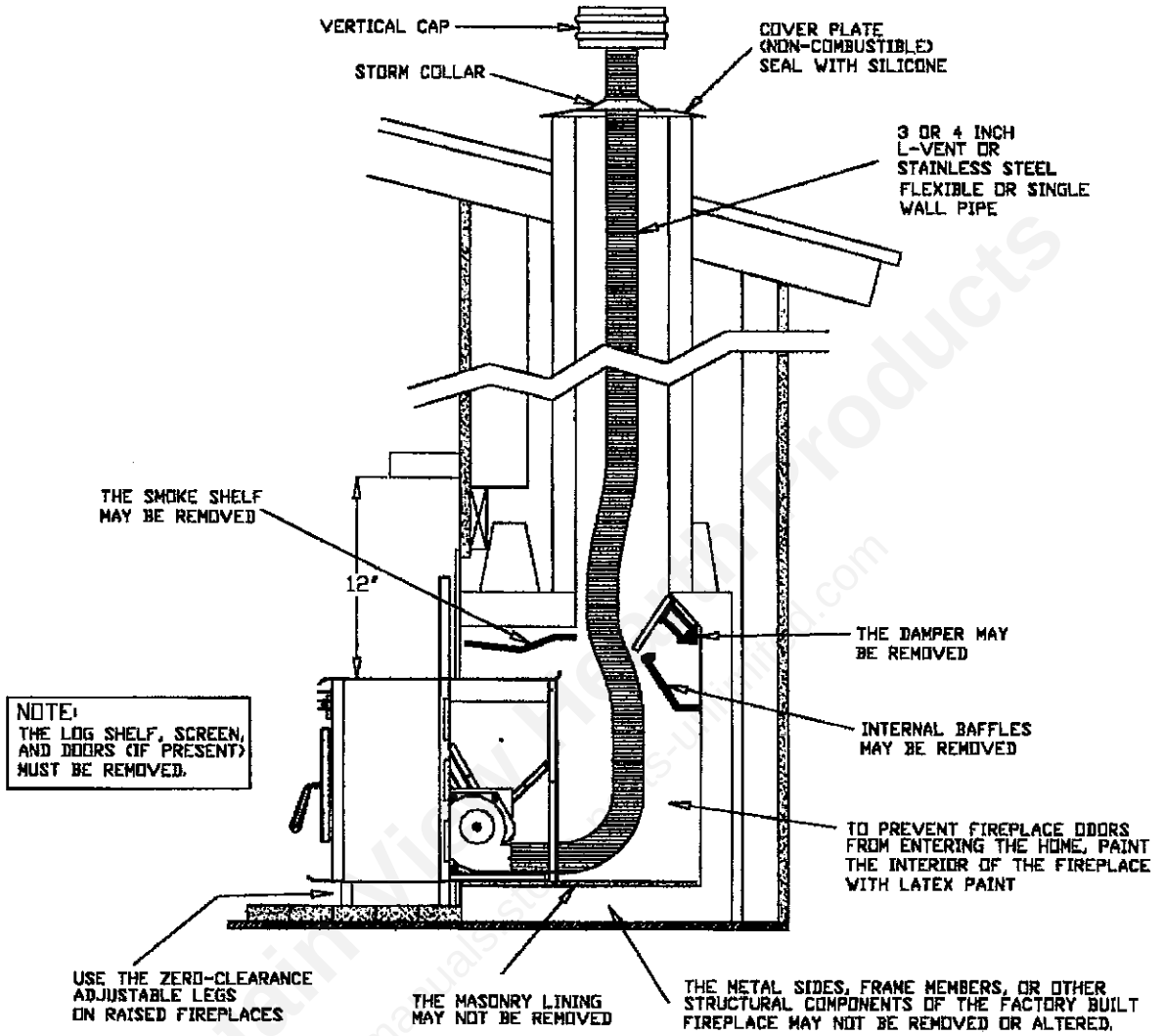
BUILT IN FOR NEW CONSTRUCTION:

- CLEARANCES
- HOLLOW CORE CONCRETE BLOCKS



FACTORY BUILT OR ZERO CLEARANCE FIREPLACES:

- ALL PARTS TAKEN OUT FOR THE INSTALLATION MUST NOT BE DAMAGED SO THEY CAN BE REPLACED IF THE STOVE IS EVER REMOVED.
- A LABEL MUST BE ATTACHED TO THE FIREPLACE WHEN INSTALLING THE STOVE IN A ZC.



THIS FIREPLACE HAS BEEN ALTERED TO ACCOMODATE A FIREPLACE INSERT AND SHOULD BE INSPECTED BY A QUALIFIED PERSON PRIOR TO RE-USE AS A CONVENTIONAL FIREPLACE.

SPECIAL MOBILE HOME REQUIREMENTS: HUD

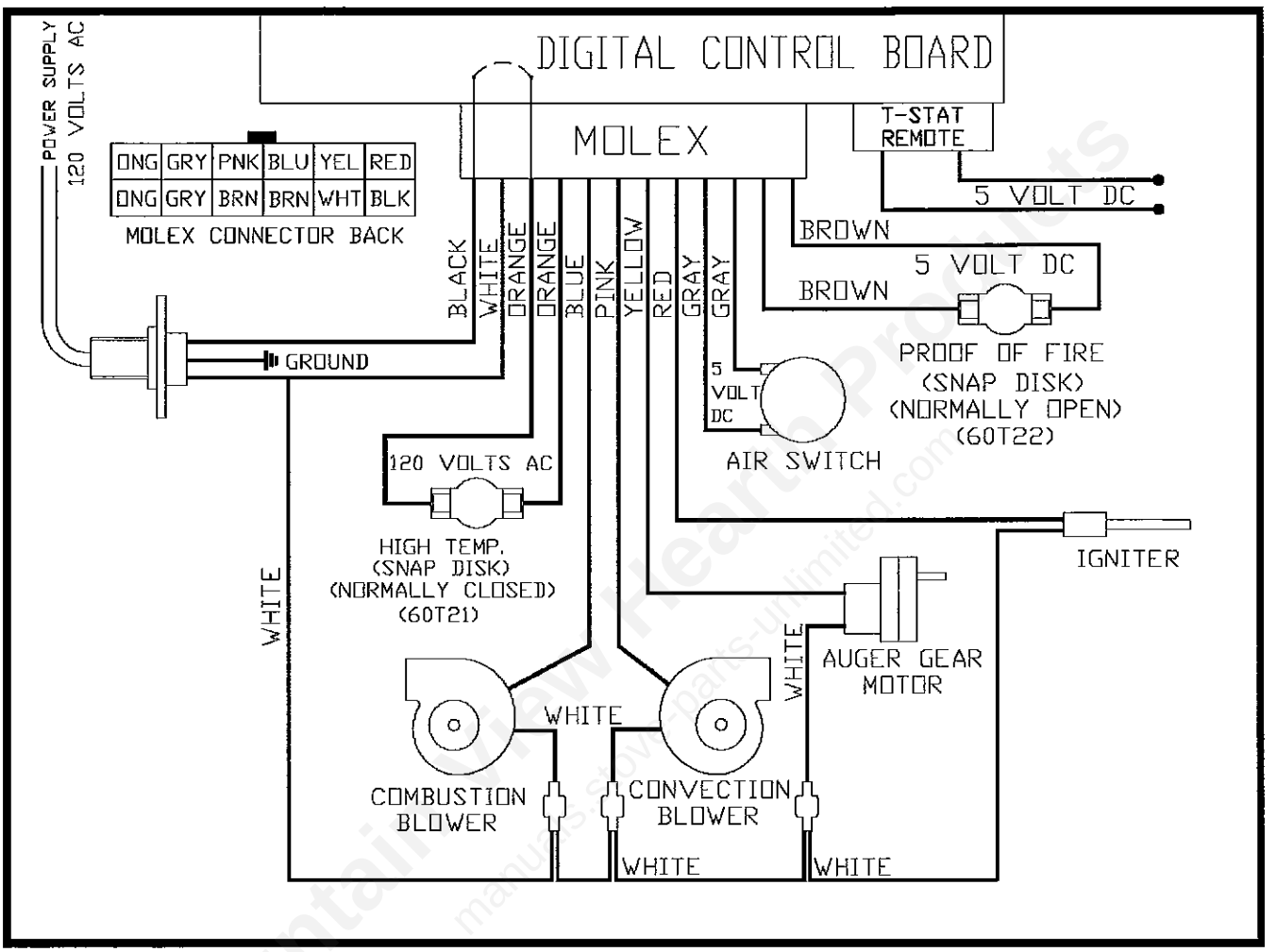
- STOVE NEEDS TO BE GROUNDED WITH #8 COPPER WIRE.
- GROUND MUST BE TERMINATED WITH A NED GROUNDING DEVICE
- STOVE MUST BE ATTACHED TO MOBILE HOME OR SCREWED DOWN FOR SHIPMENT.

3. OPERATION

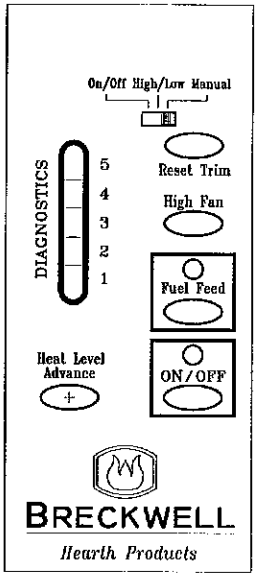
DIGITAL CONTROL BOARD

- NOTE: ALL P22'S PRODUCED BETWEEN MARCH 2003 AND MARCH 2004 (C-E-100 C/B) HAVE THE SAME THERMOSTAT OPTIONS AS THE C-E-400 DIGITAL CONTROL BOARDS. ALL 2004 AND NEWER MODEL STOVES HAVE THE SAME THERMOSTAT OPTIONS.

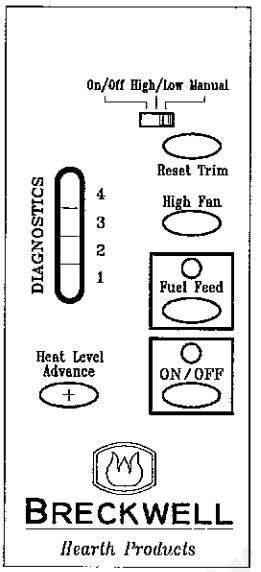
ELECTRICAL DIAGRAM



PANEL CONTROLS



C-E-401



C-E-101 - P22 & P4000 ONLY

ON/OFF POWER SWITCH

- When pushed the stove will automatically ignite.
- When pushed the Igniter has a guaranteed minimum "on time" of 10 minutes
- When pushed the igniter will stay on for 10 minutes if the POF thermodisk closes in 10 minutes or less.
- When pushed the igniter will stay on for 15 minutes if the POF thermodisk does not close. (From 10 to 15 minutes, when the POF thermodisk closes, the igniter will turn off)
- When pushed the light in the power / on/off box will flash until the igniter goes off. (Initial startup only)
- The heat level / feed rate advance is inoperable during the ignition start period. The stove will operate at the #2 setting until the power / on/off light stays on continuously.
- After the ignition start period the power on/off light stays on continuously and the stove will operate at the heat setting selected.

NOTE: If the stove has been shut off, and you want to re-start it while it is still warm, the "on/off" button must be held down for 2 seconds.

FUEL FEED SWITCH

- When the "Fuel Feed" button is pushed and held down the stove will feed pellets into the burnpot continuously. (Same as manual feed on analog board)
- When this button is pushed or when the stove is feeding automatically the light in the "Fuel Feed" box will be on. (This is convenient for timing the board)

HIGH FAN SWITCH

- The room air fan or Convection blower varies directly with the feed rate. On this board the blower varies throughout the entire range from 1 to 5, or 1 to 4 on the C-E-101.
- The high fan switch overrides the variable speed function.
- When the high fan switch is pushed the room air fan will switch to its highest setting
- When this button is pushed again the room air fan will return to its original setting based on the previous heat level advance setting.

Digital Circuit Board Convection Blower Voltages

Heat Level Setting	C-E-101	C-E-401
1	75	75
2	90	90
3	105	105
4	118	118
5	N/A	118

RESET TRIM

With the different sizes and quality of fuel the low feed rate sometimes needs to be adjusted. This is usually a one-time adjustment when the stove is first installed or if the customer changes pellets. The "Reset Trim" button when adjusted allows for 3 different feed rate settings for the 1 or low feed setting. To adjust simply push the "Reset Trim" button while the stove is running and watch the bar graph.

- When the 1 & 3 lights are illuminated on the bar graph the low feed rate is at its "Lowest" setting.
- When the 1 light is illuminated on the bar graph the low feed rate is at its "normal" setting.
- When the 1 & 4 lights are illuminated on the bar graph the low feed rate is at its "Highest" setting.

NOTE: These values will be shown whenever the stove is set to the 1 setting. For example when the reset trim is set to its lowest setting every time the stove is set on low the 1 & 3 lights will be illuminated on the bar graph.

HEAT LEVEL / FEED RATE ADVANCE

When this button is pushed the pellet feed rate or heat output will be adjusted. The levels of heat output change incrementally on the bar graph from level 1 to 5, or 1 to 4 on the C-E-101.

START-UP PROCEDURE

1. Fill hopper and clean burnpot.
2. Press power / on/off button, its light will come on.
3. Adjust the damper to ½" to ¾" open from all the way in. (This may vary depending on the installation)
4. Adjust the feed rate to the desired setting by pressing the heat level / feed rate advance button. This setting will not take effect until the start-up cycle has completed, the control board is programmed to operate at the #2 setting, regardless of what setting is selected, while it is in the start-up cycle.
5. Once the fire is well established the damper may have to be re-adjusted.
   - If the fire doesn't start within 15-min. press the power / on/off button, wait a few minutes and start the procedure again.

OPENING DOOR

If the door is opened while the stove is in operation it must be closed within 30 seconds or the stove will shut down. If the stove shuts down push the "POWER / ON/OFF" button to re-start the stove.

AIR SWITCH DELAY

The air switch is delayed through the circuit board for 30 seconds on startup to allow the combustion blower to ramp up.

ROOM AIR FAN

When starting the stove the Room Air Fan will not come on until the stove's heat exchanger warms up and closes the POF thermodisk. This usually takes about 8 minutes from start-up.

IF THE POF THERMODISK DOESN'T CLOSE DURING THE IGNITION SEQUENCE

- The comb. Blower will continue to run for 10 min.
- After the comb. Blower shuts off the #3 light on the bar graph will blink indicating a POF failure.

RE-STARTING A WARM STOVE

- If the stove has been shut off, and you want to re-start it while it is still warm, the "on/off" button must be held down for 2 seconds.

IF STOVE RUNS OUT OF PELLETS

- The fire will go out and the auger motor and blowers will run until the stove cools below 90° F. The POF thermodisk will open.
- When the POF thermodisk opens the auger motor and the convection blower will shut off. The combustion blower will run for 10 min. During this 10 min. period the POWER / ON/OFF led will flash.
- When the combustion blower stops running the #3 bar graph light will flash indicating that the POF thermodisk has opened.

To restart, refill hopper and press "Fuel Feed" button until pellets begin to drop into burnpot. Press "POWER / ON/OFF" button.

POWER OUTAGE

- In the event of a power outage the stove will restart when the power is restored as long as the POF thermodisk is still closed (over 90° F). This is usually 30 to 45 minutes.
- When in ON/OFF thermostat mode a power failure will shut the stove off. When the power is restored the stove will go through its start-up procedure.

HIGH TEMP. THERMODISK

Most stoves are equipped with a resettable high temperature thermodisk. This disk has a reset button on its backside. Others use a non-resettable style high temperature thermodisk. These safety switches have two functions.

- To recognize an over-heat situation in the stove and shut down the fuel feed or auger system.
- To recognize an internal control board failure causing a constant feed of pellets and shut down the fuel feed or auger system.

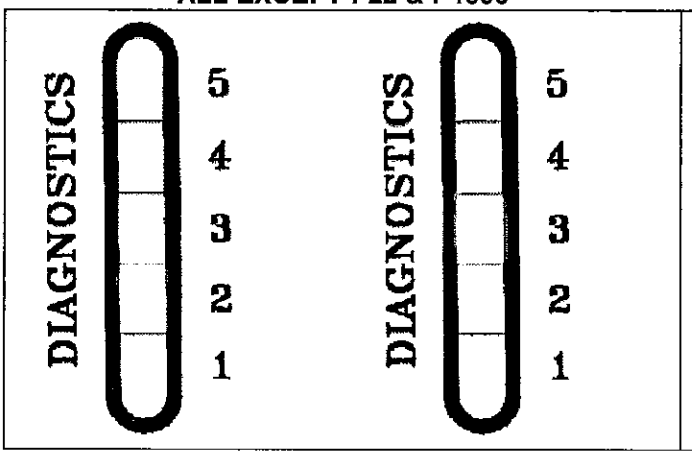
Once tripped, the reset button will have to be pushed before restarting the stove. Non-resettable thermodisks must cool to reset themselves; this could take 30 to 45 minutes. The manufacturer recommends that the customer call the dealer if the high temperature thermodisk trips as this may indicate a more serious problem.

CIRCUIT BOARD FUSES
The C-E-101 and C-E-401 Digital Circuit Boards are equipped with only one 5-amp fuse on the bottom right corner of the board back. It is a power input fuse, should any component draw too much power it will blow, terminating power to the unit.

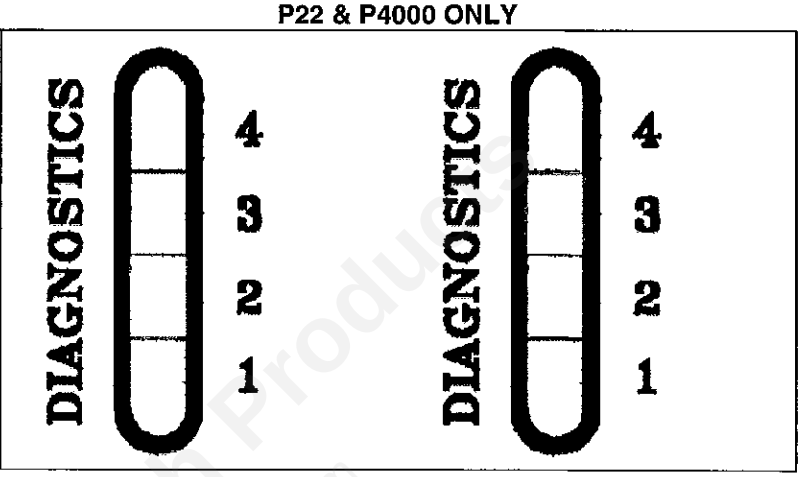
NOTE: The fuses are provided as a safety feature. Once the fuse or fuses are replaced the board may feed constantly requiring a board replacement.

DIAGNOSTICS
The Digital board is equipped with two features that will help trouble shoot problems in the event of a malfunction.

ALL EXCEPT P22 & P4000



P22 & P4000 ONLY



PROOF OF FIRE
If the #3 light on the Heat Level / Feed Rate Advance bar graph is flashing this indicates the stove has lost PROOF OF FIRE or has not achieved normal operating status. This means the POF thermodisk has opened. The disk normally opens at 90° F.

- When the #3 light starts flashing the Igniter and the Auger will shut down.
- When the #3 light starts flashing the Combustion Blower will operate for 10 minutes and shut down.

POSSIBLE CAUSES:

1. The hopper is out of pellets.
2. The burnpot is not pushed completely to the rear of the firebox.
3. The burnpot holes are blocked.
4. The High Temp Thermodisk has tripped.
5. The air damper was open too far on a low feed setting.
6. The fuse on the circuit board has blown.
7. The POF thermodisk needs to be relocated to the combustion blower housing. (Mid 2002 and older digital control board models only)
8. The POF thermodisk has malfunctioned.
9. The Digital board is not supplying power to the POF thermodisk.

AIR SWITCH
If the #2 light on the Heat Level / Feed Rate Advance bar graph is flashing this indicates that the stove has lost negative pressure. The air switch has opened.

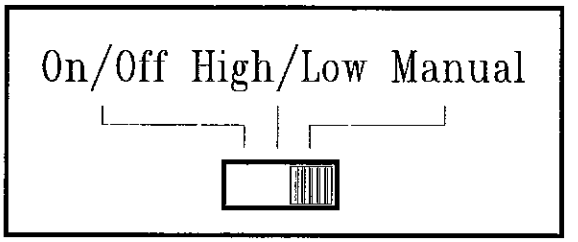
- When the #2 light starts flashing the Digital Board will shut down the Igniter and the Auger Motor.
- The Combustion blower will run for 10 minutes.

POSSIBLE CAUSES:

1. The air switch hose or attachment pipes are blocked with ash.
2. The air inlets, burnpot, combustion air chambers, exhaust blower or exhaust pipe are blocked with ash or foreign matter.
3. The air switch is stuck open.
4. The Combustion Blower has failed.
5. The stove door or the ash container doors (on units where the pedestal is sealed) are not completely latched tight.
6. The Air Switch connections are bad.
7. The gray wires are pulled loose at the Molex connector on the wire harness.
8. The circuit board is not supplying power to the air switch.
9. The slider plate is not properly sealing the firebox floor, on stoves so equipped.
10. The exhaust vent pipe does not meet EVL requirements.

THERMOSTAT – C-E-101 & C-E-401

- A MILLIVOLT THERMOSTAT IS REQUIRED.
- Unplug stove from power outlet.
- Remove control board from stove.
- The two thermostat wires connect to the terminal block on the lower left side of the back of the control board. (See figure)
- Insert the wires in the terminal side and tighten the two screws.



MODES

TO SWITCH BETWEEN ANY OF THE THREE MODES THE STOVE MUST BE SHUT OFF, THE NEW MODE SELECTED, AND THE STOVE RESTARTED.

MANUAL MODE

- In this mode the stove will operate only from the control panel as detailed in the "OPERATION" section of the stoves owner's manual.

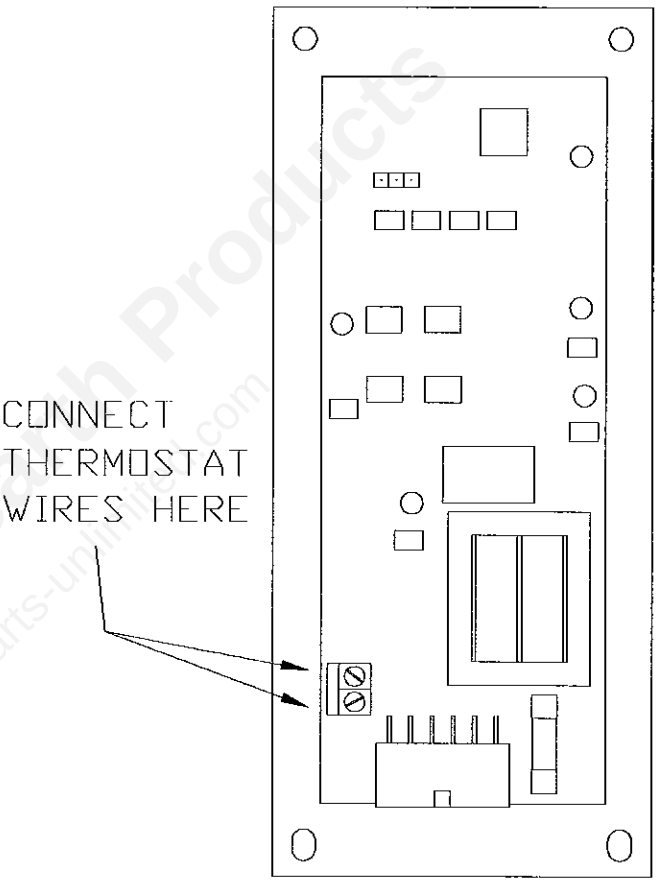
NOTE: If a thermostat is not being used, or if there is not one connected, the thermostat switch must be set to "Manual".

HIGH/LOW THERMOSTAT MODE

- When engaged in this mode the stove will automatically switch between two settings. When warm enough, it will switch to the #1 or low setting. The room air blower will also slow to its lowest speed.
- The Heat Level Advance setting on the bar graph will stay where it was initially set. When the house cools below the thermostat setting, the stove will switch to the feed rate of the heat level advance setting.

ON/OFF THERMOSTAT MODE

- In this mode when the home is warm enough the stove will shut off. The fans will continue to run until the stove cools.
- When the home cools below the thermostat setting, the stove will automatically restart and run at the last feed rate setting.



NOTE: When in "high/low" or "on/off" thermostat mode –

- Do not operate the stove higher than the #3 setting.

Set damper control rod approximately ½" to ¾" out. This will vary depending on elevation and weather conditions. Observe stoves operation and adjust damper as necessary.

DIGITAL CIRCUIT BOARD TIMING CYCLES

Digital Circuit Board Timing & Feed Rates

Heat Level Setting	C-E-101		C-E-401	
	LB/HR	On Time	LB/HR	On Time
1 & 3	0.9	1.4 sec.	0.9	1.4 sec.
1	1	2 sec.	1	2 sec.
1 & 4	1.3	2.5 sec.	1.3	2.5 sec.
2	2.1	4 sec.	2.1	4 sec.
3	3.3	7 sec.	3.3	7 sec.
4	4.3	9 sec.	4.3	9 sec.
5	N/A	N/A	5	12 sec.
Total Cycle Time 14.5 sec.				

4. MAINTENANCE

IT IS IMPORTANT TO SPEND TIME WITH THE CUSTOMER AFTER AN INSTALLATION TO STRESS THE IMPORTANCE OF MAINTAINING THEIR STOVE AS WELL AS SHOWING THEM HOW TO OPERATE THE UNIT. BE PATIENT!

ASH DISPOSAL:

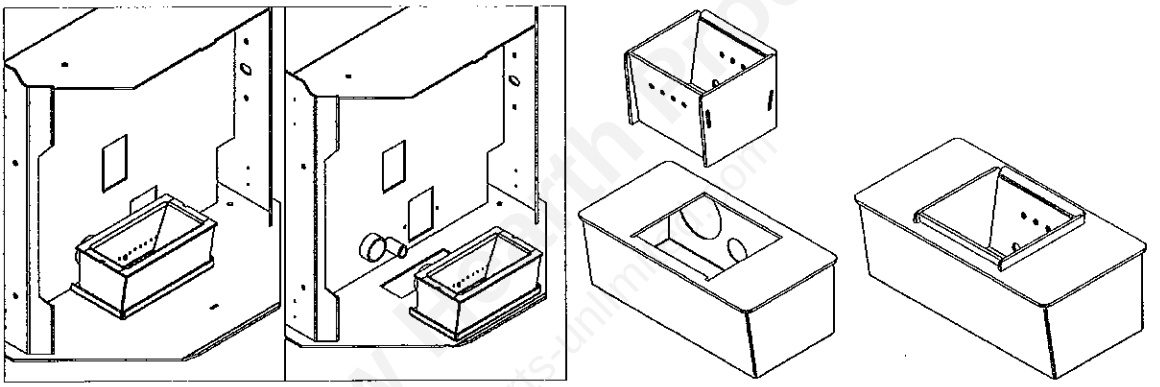
- MAKE SURE FIRE IS OUT AND COOL
- REMOVE BURNPOT BY PULLING STRAIGHT OFF, OR INNER SECTION BY LIFTING STRAIGHT UP

NOTE: SOME STOVES WILL REQUIRE PULLING ASH PLATE AND BURNPOT SIMULTANOUSLY.

- DUMP BURNPOT, OR INNER SECTION, INTO ASH PAN OR VACUUM. (CAN ALSO BE SCRAPED WITH CLEANING TOOL)
- ASH CAN BE SCRAPED INTO ASH PAN AREA BY USING THE CLEANING TOOL.
- STOVE MUST BE TURNED OFF AND COOL TO OPEN THE ASH DOOR AND REMOVE THE ASH BIN FOR DUMPING.

NOTE: SOME STOVES WILL ALLOW REMOVAL OF THE ASH BIN WHILE THE FIRE IS BURNING.

- WHEN RE-INSERTING THE BURNPOT, MAKE SURE IT IS ALL THE WAY BACK.
- **MOST PEOPLE WILL VACUUM OUT THEIR STOVE**
  EDUCATE THE CONSUMER ABOUT THE CORRECT TYPE OF VACUUM CLEANER; A LOVELESS ASH VACUUM OR A SYSTEM WITH VERY GOOD QUALITY FILTER SYSTEM.



HEAT EXCHANGER TUBES:

- SCRAPE ONCE PER WEEK.
- MOVE TUBE SCRAPER HANDLE IN AND OUT FIVE OR SIX TIMES.

COMBUSTION INTERIOR CHAMBERS:

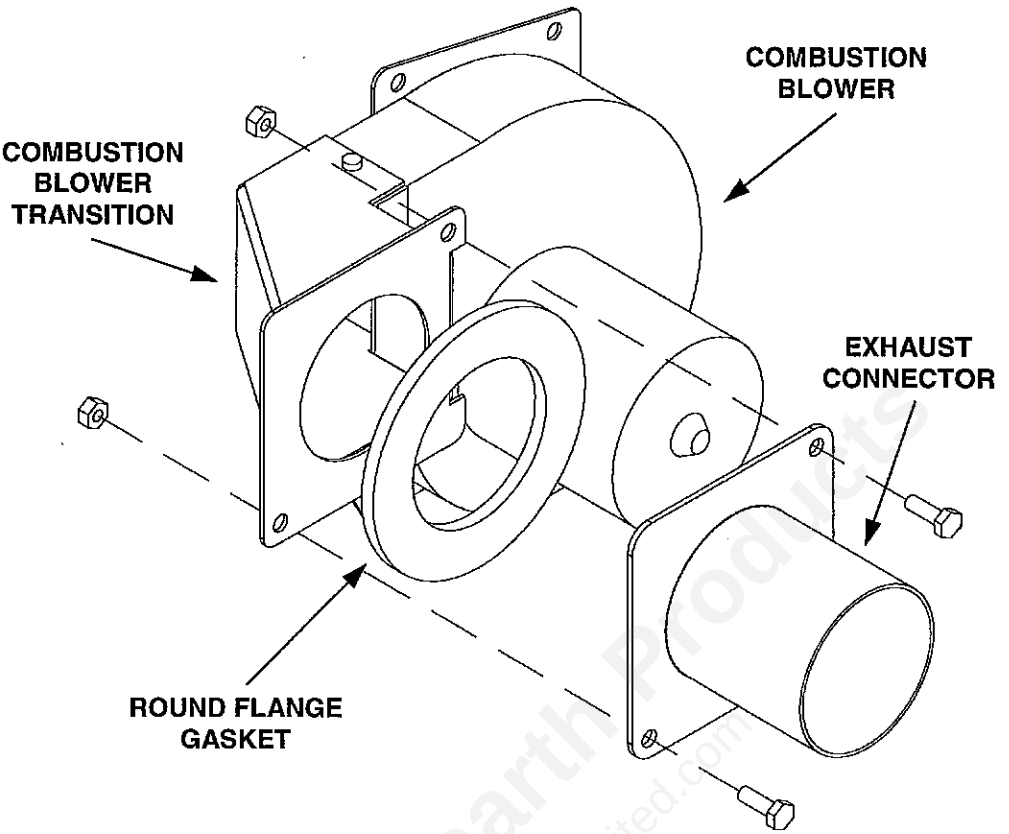
- CLEAN ONCE EVERY TON BURNED.
- REMOVE THE CLEANING PLATES INSIDE THE FIREBOX AND SCRAPE AND VACUUM OUT THE ASH.
  NOTE: A SMALL HOSE TAPED TO VACUUM CLEANER HOSE WORKS WELL FOR HARD TO GET AT AREAS. A BOTTLE BRUSH OR METAL BANDING WORKS WELL FOR CLEANING THE SIDE COMBUSTION CHAMBERS.
- CLEAN THE IMPELLER BLADES FROM INSIDE THE FIREBOX WITH A TOOTHBRUSH.

BLOWERS:

- CONVECTION BLOWER – VACUUM THE WINDINGS AND IMPELLER AT LEAST ONCE PER YEAR.
- COMBUSTION BLOWER – REMOVE AT LEAST ONCE PER YEAR AND BRUSH AND VACUUM THE ASH AND CREOSOTE. THE MOTOR AND IMPELLER CAN BE REMOVED FROM THE HOUSING FOR CLEANING, BE SURE TO HAVE A REPLACEMENT GASKET READY AS THE OLD GASKET WILL LIKELY NOT BE REUSEABLE.
- OILING – BOTH THE COMBUSTION AND CONVECTION BLOWERS ARE OILESS. ON 2003 AND OLDER MODELS WITH THEIR ORIGINAL BLOWER THE CONVECTION BLOWER CAN BE OILED ONCE EVERY 6 MONTHS WITH *1 OR 2 DROPS* OF SAE 20 WT. OR TURBINE OIL. **DO NOT OVER OIL!!**

CHIMNEY CLEANING:

- PELLET VENT CHIMNEY SHOULD BE SWEPT ONCE PER YEAR. ON THE P24FS, P24I, AND P2000I, REMOVE EXHAUST ADAPTER AND VACUUM FROM THE BOTTOM SIDE. ALL OTHER UNITS REQUIRE CLEANING THROUGH A CLEANOUT TEE OR BY REMOVING THE VENT PIPE FROM THE ADAPTER.
- THE CONSUMER SHOULD INSPECT THE CHIMNEY TWICE A YEAR FOR CREOSOTE OR FLY ASH.



TOOLS:

- HAVING THE RIGHT TOOL EVERY TIME FOR THE JOB SHOWS PROFESSIONALISM.
- TWO IMPORTANT TOOLS - MULTIMETER AND MAGNEHILIC GUAGE. MAGNEHILIC PRESSURES CHANGE WITH EVERY INSTALLATION. CALL THE FACTORY IF YOU ENCOUNTER A PROBLEM.

5. TROUBLESHOOTING

STOVE SHUTS OFF AND THE # 2 LIGHT FLASHES	
Possible Causes:	**Possible Remedies:** (Unplug stove first when possible)
1. Airflow switch hose or stove attachment pipes for hose are blocked.	Unhook air hose from the air switch and blow through it. If air flows freely, the hose and tube are fine. If air will not flow throw the hose, use a wire coat hanger to clear the blockage.
2. The air inlet, burnpot, interior combustion air chambers, combustion blower, or exhaust pipe are blocked with ash or foreign material.	Follow all cleaning procedures in the maintenance section of the owner's manual.
3. The firebox is not properly sealed.	Make sure the door is closed and that the gasket is in good shape. If the ash door has a latch, make sure the ash door is properly latched and the gasket is sealing good. If the stove has just a small hole for the ashes to fall through under the burnpot, make sure the slider plate is in place to seal off the firebox floor.
4. Vent pipe is incorrectly installed.	Check to make sure vent pipe installation meets criteria in owner's manual.
5. The airflow switch wire connections are bad.	Check the connectors that attach the gray wires to the air switch.
6. The gray wires are pulled loose at the Molex connector on the wiring harness.	Check to see if the gray wires are loose at the Molex connector.
7. Combustion blower failure.	With the stove on, check to see if the combustion blower is running. If it is not, you will need to check for power going to the combustion blower. It should be a full current. If there is power, the blower is bad. If there is not, see #8.
8. Control board not sending power to combustion blower.	If there is no current going to the combustion blower, check all wire connections. If all wires are properly connected, you have a bad control board.
9. Control board not sending power to air switch.	There should be a 5-volt current (approximately) going to the air switch after the stove has been on for 30 seconds.
10. Air switch has failed (very rare).	To test the air switch, you will need to disconnect the air hose from the body of the stove. With the other end still attached to the air switch, very gently suck on the loose end of the hose (you may want to remove the hose entirely off the stove and the air switch first and make sure it is clear). If you hear a click, the air switch is working. BE CAREFUL TOO MUCH VACUUM CAN DAMAGE THE AIR SWITCH.
11. Air hose connected to the wrong port. (This applies to dual port air switches only)	Check to see if the air hose is connected to the white / light gray port (there will be an embossed "-" near it).

STOVE SHUTS OFF AND THE # 3 LIGHT FLASHES	
Possible Causes:	**Possible Remedies:** (Unplug stove first when possible)
1. The hopper is out of pellets.	Refill the hopper.
2. The air damper is too far open for a low feed setting.	If burning on the low setting, you may need to close the damper all the way (push the knob in so it touches the side of the stove).
3. The burnpot is not pushed completely to the rear of the firebox, or the burnpot insert is not positioned properly (pellets bouncing off and out of burnpot).	Make sure that the air intake collar on the burnpot is touching the rear wall of the firebox. The burnpot insert should be level and the igniter hole to the back of the burnpot (see diagram on page 17).
4. The burnpot holes are blocked.	Remove the burnpot and thoroughly clean it.
5. The air inlet, the interior chambers, or exhaust system has a partial blockage.	Follow all cleaning procedures in the maintenance section of the owner's manual.
6. The auger shaft is jammed.	Start by emptying the hopper. Then remove the auger motor by a) loosening the tension screw on the auger coupler (you will need a 1/8 Allen key) or b) removing the auger pin. If the stove has the auger shaft inspection plate in the hopper, remove the plate so that you can see the auger shaft. Gently lift the auger shaft straight up so that the end of the auger shaft comes up out of the bottom auger bushing. Next, remove the two nuts that hold the top auger biscuit in place (some early model did not have the two nuts and the top biscuit is held in place by a tab that sticks through the plate that you just removed). Then rotate the bottom end of the auger shaft up towards you until you can lift the shaft out of the stove. Early generation digital stoves did not have the auger shaft plate. In these cases, remove the two screws that hold the bottom auger biscuit in place and very gently free it from the RTV silicone that holds it in place. Once the bottom biscuit is removed, the auger shaft can be dropped down out of the auger tube. After you have removed the shaft, inspect it for bent flights, burrs, or broken welds. Remove any foreign material that might have caused the jam. Also, check the auger tube for signs of damage such as burrs, rough spots, or grooves cut into the metal that could have caused a jam.
7. The auger motor has failed.	Remove the auger motor from the auger shaft and try to run the unit. If the motor will turn the shaft is jammed on something. If the motor will not turn, the motor is bad.
8. The Proof of Fire (POF) thermodisk has malfunctioned.	Temporarily bypass the POF thermodisk by disconnecting the two brown wires and connecting them with a short piece of wire. Then plug the stove back in. If the stove comes on and works, you need to replace the POF thermodisk. This is for testing only. DO NOT LEAVE THE THERMODISC BYPASSED. Your blowers will never shut off and if the fire went out the auger will continue to feed pellets until the hopper is empty if you leave the POF thermodisk bypassed.
Continued on the Next Page	

Possible Causes: (Continued)	**Possible Remedies:** (Unplug stove first when possible)
9. The high limit thermodisk has tripped or is defective.	Using the owner's manual, locate the high limit thermodisk. If there is a red button located on the back of it, press it. If you hear a click, the high limit had tripped. The stove should now function normally. If there is no reset button you must wait 30 to 45 minutes for the stove to cool. It should now operate normally. To test if the thermodisk is bad, you can bypass it as described previously for the POF thermodisk.
10. The Fuse on the control board has blown.	Remove the control board. On the back there is one fuse. If it appears to be bad, replace it with a 5 Amp 250 Volt fuse. Plug the stove back in and try to run the unit.
11. The control board is not sending power to the POF thermodisk or other auger system components.	There should be a 5-volt (approximately) current going to the POF thermodisk after the stove has been on for 10 minutes.
12. On some early generation digital stoves, the POF may not be getting an accurate temperature reading at its current location.	If the thermodisk on the stove is located on the backside of the firewall, it needs to be relocated. See the directions for relocating the POF thermodisk located at the back of this manual.

STOVE FEEDS PELLETS, BUT WILL NOT IGNITE	
Possible Causes:	**Possible Remedies:**
13. Air damper open too far for ignition.	Push the air damper in closer to the side of the stove for startup. In some situations it may be necessary to have the damper completely closed for ignition to take place. After there is a flame, the damper can then be adjusted for the desired feed setting.
14. Blockage in igniter tube or inlet for igniter tube.	Find the igniter housing on the backside of the firewall. The air intake hole is a small hole located on bottom side of the housing. Make sure it is clear. Also, look from the front of the stove to make sure there is not any debris around the igniter element inside of the igniter housing.
15. The burnpot is not pushed completely to the rear of the firebox, or the burnpot insert is not positioned properly (pellets bouncing off and out of burnpot).	Make sure that the air intake collar on the burnpot is touching the rear wall of the firebox. The burnpot insert should be level and the igniter hole to the back of the burnpot (see diagram on page 17).
16. Bad igniter element.	Put power directly to the igniter element. Watch the tip of the igniter from the front of the stove. After about 2 minutes the tip should glow. If it does not, the element is bad.
17. The control board is not sending power to the igniter.	Check the voltage going to the igniter during startup. It should be a full current. If the voltage is lower than full current, check the wiring. If the wiring checks out good, the board is bad.

STOVE WILL NOT FEED PELLETS, BUT FUEL FEED LIGHT COMES ON AS DESIGNED	
Possible Causes:	**Possible Remedies:**
1. Fuse on control board blew	Remove the control board. On the back there is one fuse (2 on the C-E-100 & C-E-400). If it appears to be bad, replace it with a 5 Amp 250 Volt fuse. Plug the stove back in and try to run the unit.
2. High limit switch has tripped or is defective	Using the owner's manual, locate the high limit thermodisk. If there is a red button located on the back of it, press it. If you hear a click, the high limit had tripped. The stove should now function normally. If there is no reset button you must wait 30 to 45 minutes for the stove to cool. It should now operate normally. To test if the thermodisk is bad, you can bypass it as described previously for the POF thermodisk. Also feel for air movement behind the firebox where the blowers are, if the rear convection chamber wall is not sealed properly the heated air can cause the components to shut down and allow the stove to overheat and trip the high temp thermodisk.
3. Bad auger motor	Remove the auger motor from the auger shaft and try to run the unit. If the motor will turn, the shaft is jammed on something. If the motor will not turn, the motor is bad.
4. Auger jam	Start by emptying the hopper. Then remove the auger motor by a) loosening the tension screw on the auger coupler (you will need a 1/8 Allen key) or b) removing the auger pin. If the stove has the auger shaft inspection plate in the hopper, remove the plate so that you can see the auger shaft. Gently lift the auger shaft straight up so that the end of the auger shaft comes up out of the bottom auger bushing. Next, remove the two nuts that hold the top auger biscuit in place (some early model did not have the two nuts and the top biscuit is held in place by a tab that sticks through the plate that you just removed). Then rotate the bottom end of the auger shaft up towards you until you can lift the shaft out of the stove. Early generation digital stoves did not have the auger shaft plate. In these cases, remove the two screws that hold the bottom auger biscuit in place and very gently free it from the RTV silicone that holds it in place. Once the bottom biscuit is removed, the auger shaft can be dropped down out of the auger tube. After you have removed the shaft, inspect it for bent flights, burrs, or broken welds. Remove any foreign material that might have caused the jam. Also, check the auger tube for signs of damage such as burrs, rough spots, or grooves cut into the metal that could have caused a jam.
5. Loose wire or connector	Check all wires and connectors that connector to the auger motor, high limit switch, and the Molex connector.
6. Bad control board	If the F2 fuse is good, the wires and connectors check out good, and the high limit switch did not trip, test for power going to the auger motor. If there is not a full current going to the auger motor when the fuel feed light is on, you have a bad control board.

AFTER STOVE HAS BEEN ON FOR A WHILE, THE BURNPOT OVERFILLS	
Possible Causes:	**Possible Remedies:**
1. Stove or vent pipe is dirty, which restricts airflow through the burnpot.	Follow all cleaning procedure in the maintenance section of the owner's manual.
2. Vent pipe installed improperly.	Check to make sure the vent pipe has been installed according to the criteria in the owner's manual.
3. Air damper is set too far in (closed) for a higher setting.	Pull the damper knob farther out away from the side of the stove and try to burn the unit again.
4. Burnpot holes are blocked.	Remove the burnpot and thoroughly clean it.
5. Burnpot holes are too small (old style one piece large basket burnpots only).	The holes in the bottom of the burnpot should be at least 3/16". If they are smaller than 3/16" drill them out. It is possible to go larger than 3/16" if needed, but stay under ¼". If the holes are made too big, you could have a problem burning on the low setting.
6. Air damper is broken.	Visually inspect the damper assembly. Make sure the damper plate is attached to the damper rod. When the damper rod is moved the plate should move with it.
7. Blockage in air intake pipe.	Visually inspect the air intake pipe that leads into the burnpot for foreign material.
8. Circuit board malfunction.	Time the fuel feed light at each setting (after the stove has completed the startup cycle). Make sure the times match the auger timing chart. If the auger motor runs constantly, the board is bad.
9. Combustion blower is not spinning fast enough.	Test the RPM on the blower after the blades have been cleaned. The RPM should be approximately 3000 RPM.

SMOKE SMELL COMING BACK INTO THE HOME	
Possible Causes:	**Possible Remedies:**
1. There is a leak in the vent pipe system.	Inspect all vent pipe connections. Make sure they are sealed with RTV silicone that has a temperature rating on 500 degree F or higher. Also, seal joints with UL-181-AP foil tape. Also, make sure the square to round adapter piece on the combustion blower has been properly sealed with the same RTV.
2. The gasket on the combustion blower has gone bad.	Inspect both gaskets on the combustion blower to make sure they are in good shape.

FLAME IS LAZY, DARK, AND HAS BLACK TIPS	
Possible Causes:	**Possible Remedies:**
1. Stove or vent pipe is dirty, which restricts airflow through the burnpot.	Follow all cleaning procedure in the maintenance section of the owner's manual.
2. Vent pipe installed improperly.	Check to make sure the vent pipe has been installed according to the criteria in the owner's manual.
3. Air damper is set too far in (closed) for a higher setting.	Pull the damper knob farther out away from the side of the stove and try to burn the unit again.
4. Burnpot holes are blocked.	Remove the burnpot and thoroughly clean it.
10. Burnpot holes are too small (old style one piece large basket burnpots only).	The holes in the bottom of the burnpot should be at least 3/16". If they are smaller than 3/16" drill them out. It is possible to go larger than 3/16" if needed, but stay under ¼". If the holes are made too big, you could have a problem burning on the low setting.
5. Air damper is broken.	Visually inspect the damper assembly. Make sure the damper plate is attached to the damper rod. When the damper rod is moved the plate should move with it.
6. Blockage in air intake pipe.	Visually inspect the air intake pipe that leads into the burnpot for foreign material.
7. Circuit board malfunction.	Time the fuel feed light at each setting (after the stove has completed the startup cycle). Make sure the times match the auger timing chart. If the auger motor runs constantly, the board is bad.
8. Combustion blower is not spinning fast enough.	Test the RPM on the blower after the blades have been cleaned. The RPM should be approximately 3000 RPM.

CONVECTION BLOWER SHUTS OFF AND COMES BACK ON	
Possible Causes:	**Possible Remedies:**
1. The convection blower is overheating and tripping the internal temperature shutoff.	On 2003 and older stoves try lubricating the convection blower. Put 1-2 drops of SAE 20 oil in each of the two oiling ports. On all stoves clean any dust off of the windings and fan blades. If oiling and/or cleaning the blower does not help, the blower may be bad.
2. Circuit board malfunction.	Test the current going to the convection blower. If there is power being sent to the blower when it is shut off, then the control board is fine. If there is NOT power being sent to the blower when it shuts off during operation, then you have a bad control board.

GLASS "SOOT'S" UP AT A VERY FAST RATE	
Possible Causes:	**Possible Remedies:**
1. Stove or vent pipe is dirty, which restricts airflow through the burnpot.	Follow all cleaning procedure in the maintenance section of the owner's manual.
2. Vent pipe installed improperly.	Check to make sure the vent pipe has been installed according to the criteria in the owner's manual.
3. Air damper is set too far in (closed) for a higher setting.	Pull the damper knob farther out away from the side of the stove and try to burn the unit again.
4. Burnpot holes are blocked.	Remove the burnpot and thoroughly clean it.
11. Burnpot holes are too small (old style one piece large basket burnpots only).	The holes in the bottom of the burnpot should be at least 3/16". If they are smaller than 3/16" drill them out. It is possible to go larger than 3/16" if needed, but stay under ¼". If the holes are made too big, you could have a problem burning on the low setting.
5. Air damper is broken.	Visually inspect the damper assembly. Make sure the damper plate is attached to the damper rod. When the damper rod is moved the plate should move with it.
6. Blockage in air intake pipe.	Visually inspect the air intake pipe that leads into the burnpot for foreign material.
7. Circuit board malfunction.	Time the fuel feed light at each setting (after the stove has completed the startup cycle). Make sure the times match the auger timing chart. If the auger motor runs constantly, the board is bad.
8. Combustion blower is not spinning fast enough.	Test the RPM on the blower after the blades have been cleaned. The RPM should be approximately 3000 RPM.
9. Bad Pellets	The brand of pellets or the batch of pellets that are being used may be of poor quality. If possible, try a different brand of pellets. You might also want to try a brand that is made from a different type of wood (softwood vs. hardwood). Different woods have different characteristics when being burned.
10. The trim setting on the low feed rate is to low	Use the "Reset Trim" button to increase the low feed rate setting. If the 1 & 3 lights (1 & 4 on the C-E-400) are on, the stove is currently on the lowest setting. If only the 1 light is on, the stove is in the default (medium) setting. If the 1 & 4 lights (1 & 5 on the C-E-400) are on, the stove is in the high trim setting for the low feed rate. If the stove is being burned on one of the two lower settings, advance to the next trim setting and try burning the stove.

HIGH LIMIT SWITCH KEEPS TRIPPING	
Possible Causes:	Possible Remedies:
1. The convection blower is overheating and tripping the internal temperature shutoff.	On 2003 and older stoves try lubricating the convection blower. Put 1-2 drops of SAE 20 oil in each of the two oiling ports. On all stoves clean any dust off of the windings and fan blades. If oiling and/or cleaning the blower does not help, the blower may be bad.
2. The stove is being left on the highest setting for extended periods of time.	The highest heat level setting is designed for use over short periods of time. Burning the stove on the highest setting for longer than 1 – 2 hours could lead to potential overheating situations.
3. Fuel other than wood pellets is being burned in the stove.	Breckwell pellet stoves are designed and tested to use wood pellets. While it is possible to burn a corn mixture (corn mixed in with wood pellets) in the stove, it is not recommended to burn above the number 3 heat level. Check for signs of fuel other than wood pellets. If there are signs of corn being used, find out what mixed was being used and what setting. No other types of fuel have been approved for Breckwell pellet stoves. If there are signs of other types of fuel being used, advise the consumer to stop using them immediately.
4. Power surge or brown out situation.	A power surge, spike, or voltage drop could cause the high limit switch to trip. Check to see if a surge protector is being used on the stove. If not, recommend one to the consumer.
5. High limit switch is malfunctioning.	If the other items check out ok, replace the high limit switch.

THEROMSTAT SWITCH SET TO THE WRONG POSITION	
Possible Causes:	Possible Remedies:
1. Upon completion of the start up period the stove will only operate at the "1" setting no matter where the Heat Level Advance is set.	Slide selector switch from the "High/Low" position to the "Manual" position.
2. The stove will not power on.	Slide selector switch from the "On/Off" position to the "Manual" position.

6. PRE-DELIVERY INSPECTION INSTRUCTIONS

This checklist is designed for Breckwell Pellet stove models.

WARNING: The Alternating current (AC) electrical plug should be removed from the receptacle before attempting to modify or adjust any electrical component.

I. PELLET STOVE HAS BEEN TOUCHED UP AND CLEANED AS NEEDED.

1. Remove the screws that attach the top portion of the box to the pallet and lift it off. You can also just remove the staples from the box and remove it from the wood frame.
2. Scan the overall unit for general condition.
3. Check the outside surface for possible marring.
4. Door should fit uniformly at gasket contact with front. This fit should be tight enough so that a dollar bill can (with some resistance) be pulled through the area between the door gasket and the front of the unit.
5. Damper Movement: The damper should move freely throughout the entire range. Restricted or limited movement may be because of misalignment of damper guides.
6. Firepot: The firepot should fit snugly onto the combustion air inlet tube and fit completely flush to the back of the fire chamber, but should be easily removable to dump ashes.

II. BLOWERS RUN CORRECTLY WITHOUT NOISE OR VIBRATION.

DIGITAL BOARD
Plug the unit in and press the ON/OFF switch. Push the high fan button.

Listen to blower noise as you follow the procedure in the following section (Switches and Circuit Board).

1. CONVECTION BLOWER:
A rare whistling or high-speed wind noise can be corrected by applying silicone seal between the bottom plate and side panels (P24FS).

Vibration noise is corrected by adjustment of two or four mounting screws holding the convection blower to the back of the firebox chamber.

2. COMBUSTION BLOWER:
Vibration noise can be corrected by adjusting the tightness of the mounting bolts that hold the blower assembly to its mounting surface.

The nuts that hold the combustion blower motor to the blower housing need to be snug and have equal tightness.

III. SWITCHES AND CIRCUIT BOARD FUNCTION PROPERLY

DIGITAL BOARD:

PROCEDURE:	**Start at the following settings:**
On/Off Switch	Off
Pellet Feed Control	Low Setting
Receptacle Voltage	Between 114V and 126V

Step 1 **Press the ON/OFF Button**

Results:

- The ON/OFF LED light will blink.
- Fuel / Auger Feed LED light will come on when auger motor cycles.
- Feed Rate / Heat Level Advance should be at #1.
- The igniter rod will glow red after 2 min.
- The combustion blower comes on.

Step 2 **Press the "Fuel Feed" button**

Results:

- The auger will rotate continuously.

Step 3 **Press the "High Fan" button**

Results:

- The convection blower will run on high or 120 volts.

Step 4 **Press "Reset Trim"**

(Press and release 3 times)

Results:

- The '1' & '4' LED lights come on.
- The '1' & '3' LED lights come on.
- The '1' LED light is on.

Step 5 **Press "Heat Level Advance"**

Pre-condition:

- Bypass POF thermodisk.
- Push the ON/OFF button and wait until the ON/OFF LED stops blinking (10 min.).

Results:

- The bar LED lights will change incrementally from the '1' to the '5'
- ('1' to '4' on the P22 & P4000).
- The convection blower will increase in speed as the feed rate advances from
- '1' to '5' ('1' to '4' on the P22 & P4000).

Step 6 **Check digital board timing**

Pre-condition:

- **Bypass POF thermodisk.**
- **Push the ON/OFF button and wait until the ON/OFF LED stops blinking.**

Results:

- The duty cycle (from the start of auger rotation until the start of the next rotation) should be between 14 & 15 seconds.
  - 1 RPM (C-E-401) - The Pulse Width (length of time the auger is rotating) should be:
    - '5' setting on the bar graph = 12 sec.
    - '1' setting on the bar graph = 2 sec.
  - 1 RPM (C-E-101) - The Pulse Width (length of time the auger is rotating) should be:
    - '4' setting on the bar graph = 9 sec.
    - '1' setting on the bar graph = 2 sec.

Step 7 **Check out vacuum on the air switch**
Purpose: Air switch shuts down the auger if the flue is blocked.

Procedure: Put hand over the exhaust outlet.
Result:

1- The ON/OFF LED light will go off.
2- The # 2 light on the bar graph will blink.
3- The combustion blower will continue to run for 10 min.

Additional testing for vacuum can be done if a poor seal is suspected. Use a Negative Pressure Gauge.

IV. AUGER MOTOR IS COUPLED PROPERLY TO THE AUGER SHAFT

Visually examine the auger motor. Grasp and gently pull the auger motor to see if it is securely fastened to the auger shaft.

V. WIRES ARE PROPERLY ATTACHED AND ARE FREE FROM HOT AND MOVING PARTS.

Visually inspect all wire connections. Manually check to see if all are tight. This includes two thermodisks, convection blower, combustion blower, auger motor, power cord recepticle, air flow switch and circuit board.

Check for harness clearance from hot or moving parts. The harness should be suspended on a hook below the hopper.

VI. CHECK AIR WASH PLATE FOR TOLERANCE.

Check the gap between the glass and the air wash plate with a .040 feeler gauge. Maintain between .040" and .050".

VII. THE NEW OWNER HAS BEEN SHOWN HOW TO START, MAINTAIN AND USE THEIR PELLET STOVE.